

中国光萼苔属一新种和一新变种*

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摘要: 描述了光萼苔属的一个新种和一个新变种: 卷瓣光萼苔 *Porella recurve-loba* 和多齿光萼苔全缘变种 *P. campylophylla* (Lehm. & Lindenb.) Trev. var. *integra*, 它们分别采自中国甘肃和云南。提供了上述新分类群的描述和线条图, 并且讨论了与它们形态相似种类之间的区别特征。

关键词: 光萼苔属; 卷瓣光萼苔; 多齿光萼苔全缘变种; 中国

中图分类号: Q 949.35

文献标志码: A

文章编号: 2095-0845(2015)06-741-05

A New Species and a New Variety of *Porella* (Porellaceae, Marchantiophyta) from China

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Abstract: A new species, *Porella recurve-loba* Y. Jia & Qiang He, and a new variety, *Porella campylophylla* (Lehm. & Lindenb.) Trev. var. *integra* Y. Jia & Qiang He, are described and illustrated. Both taxa are from China, found in Gansu and Yunnan Provinces respectively.

Key words: *Porella*; *Porella recurve-loba*; *P. campylophylla* var. *integra*; China

The genus *Porella*, including about 80 species (Frey and Stech, 2009), is widely distributed all over the world except for the Arctic and Antarctic regions. According to literature, there were 90 taxa (51 species, 30 varieties, 6 subspecies and 3 forms) in eastern Asia. The center of speciation appears to be in this region. The genus is taxonomically difficult specially at the species level. Schuster (1980) stated the *Porella* might be in an active state of evolution with species boundaries ill-defined and its species showing phenomenal plasticity. For example, the characters for separation of *P. densifolia*, *P. stephani-ana* and *P. oblongifolia* were confirmed to be often unreliable (Boisselier-Dubayle and Bischler, 1994; Bischler *et al.*, 2006). Recent phylogenetic study on

Porella (Hentschel *et al.*, 2007) also showed all sections represented by Schuster (1980) were not supported by molecular data. Therefore, the investigation for sporophyte variation in *Porella* should be a worthwhile undertaking (Hentschel *et al.*, 2007).

Various bryologists (Hattori, 1970; Gao and Aur, 1978; Luo and Wu, 1980; Luo, 1987, 2000; Bai, 2000) have studied the Chinese *Porella*. Forty species of the genus have been recorded in China (Piippo, 1990; Luo, 2000; Gao and Wu, 2010; Jia and He, 2013). However, many specimens of *Porella* have not been identified in herbaria yet. The investigation of *Porella* for some regions is very poor. For example, *Porella* in Ningxia and Qinghai have not been reported yet and only one species of *Porella* was

* Funding: National Natural Science Foundation of China (31170188): Taxonomic study on Hepaticae and Anthoceros of Mts. Qinling, China

Received date: 2015-03-27, Accepted date: 2015-06-23

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reported from Xijiang (Piippo, 1990; Jia and He, 2013). Therefore, the *Porella* flora of China is still insufficiently known. Some new or new record species might be found there if more extensive investigations are made. In this article, we describe two new taxa of *Porella* from Gansu and Yunnan, China.

卷瓣光萼苔 Juan-Ban-Guang-E-Tai

***Porella recurve-loba* Y. Jia & Qiang He sp. nov.**

Fig. 1.

Plants medium-sized, greenish yellow or yellowish brown in herbarium material; stems 3–5 cm long, 0.3–0.4 mm in diam., with leaves 3–4 mm wide, irregularly branched, branches obliquely spreading, 2.0–3.5 cm long. Leaves densely imbricate, keel very short; dorsal leaf-lobe widely spreading, oblong-ovate, 1.5–2.0 mm long, 0.75–1.0 mm wide, the apex rounded or obtuse, entire. Median cells 12.5–

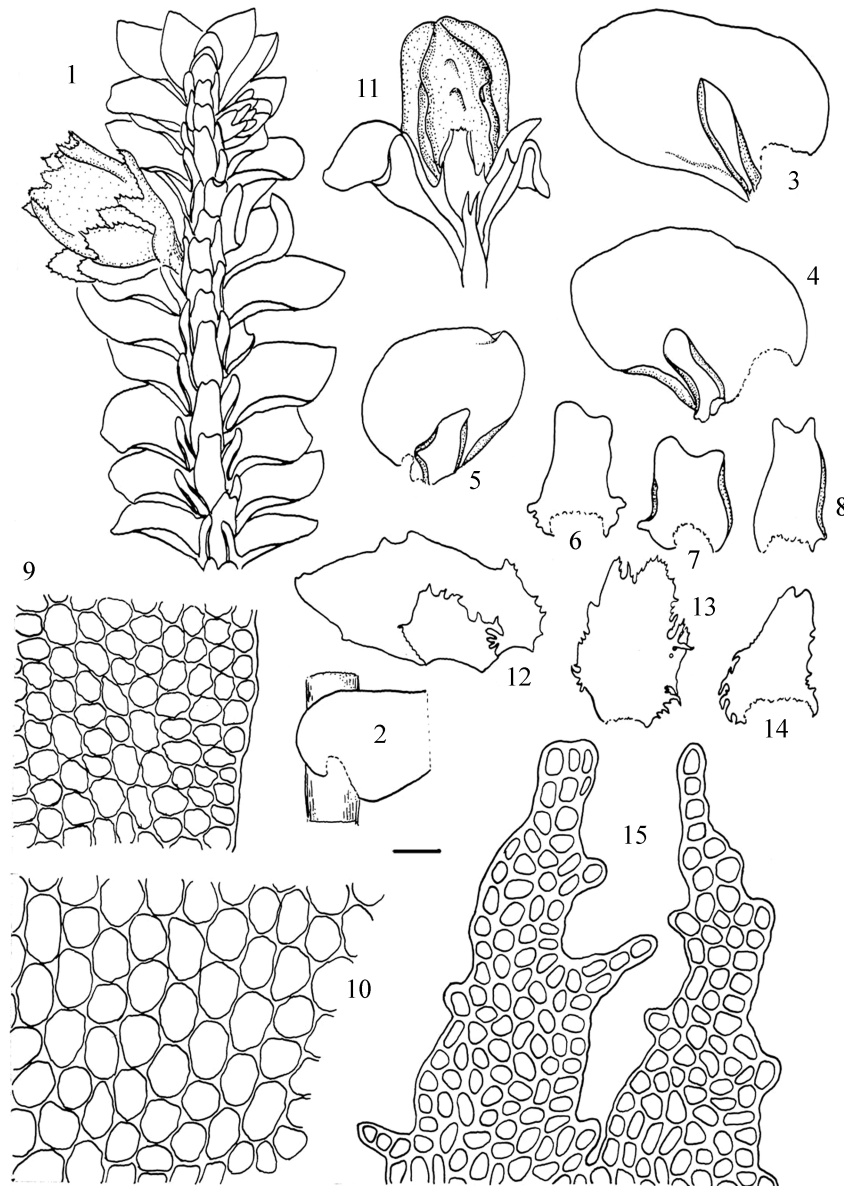


Fig. 1 *Porella recurve-loba* Y. Jia & Q. He

1. A portion of branch with perianth; 2. Part of stem, dorsal view, showing the insertion of dorsal leaf-lobe to the stem; 3–5. Leaves; 6–8. Underleaves; 9. Median cells of the dorsal leaf-lobe; 10. Basal cells of the dorsal leaf-lobe; 11. Perianth; 12. Innermost bract; 13–14. Innermost bracteoles; 15. cells of lobes of perianth-mouths. Drawn from L. Y. Pei 1205 (China: Gansu, Wenxian Co., on tree, 1 190–1 660 m, July 5. 2006, in PE). (Scale=0.4 mm, for 1; Scale=0.3 mm, for 2; Scale=0.25 mm, for 3–8, 11–14; Scale=25 μ m, for 9–10, 15). (Drawn by Qiang He)

25 × 12.5–17.5 μm, with thin walls and small trigones, basal cells 22.5–35 × 20–22.5 μm, with thin walls, trigones very small or absence, trigones gradually become smaller towards base; ventral leaf-lobe oblique or nearly parallel to the stem, rectangle, 0.5–0.75 mm long, 0.2–0.3 mm wide at middle, lateral margins entire, sometimes 1–2 small additional teeth at nearly base, and often strongly recurved from middle to base, sometimes extend to apex, base not decurrent. Underleaves imbricate, rectangular, 0.4–0.6 mm long, 0.35–0.50 mm wide, the apex some times recurved, retuse, margins entire, lateral margins sometimes narrowly recurved, but sometimes angulate-toothed at base, the base not or very shortly decurrent. Leaves and underleaves of the primary branch similar to those on the stem, but more or less narrower. Gynoeceia lateral on the secondary or primary branches, very shortly pedicellate; perianth campanulate, ventral plica wide and indistinct, the mouth with 12 short lobes, lobes triangular-lanecolate, with a single apical tooth and 2–3 lateral teeth consisted of 2–6 cells. Bracts in 1 pair; dorsal lobe of the inner bract oblong with sub-acute apex, basal margins few tooth, ventral lobe of the inner bract toothed along the margins. Sporophyte capsules spherical, 4 ridges. Spores not seen.

Type: China. Gansu, Wenxian Co., Bikou town, Shilonggou, on tree trunk, 1 190–1 660 m, July 5. 2006, Collector. Pei Lin-Ying 1205 (holotype: PE).

This species is related to *Porella obtusiloba* Hatt., which endemic to China, but it differs from the latter species in entire leaves, retuse, underleaves being no or very shortly decurrent, lateral margins of underleaves sometimes having angulate-toothed at base, and median cells of perianths having no trigones.

This species is also similar to *P. chinese* in ventral-lobes being narrowly recurved in lower, but the latter differs from the new species in the ventral-lobes and underleaves having long-decurrent.

In the previous studies (An, 2002; Wu *et al.*, 2002, 2009), 13 species and 2 varieties of *Porella* were reported in Gansu. This new species was col-

lected from Wenxian Co., Gansu, located in the western Qinling Mountains in China.

Etymology. The specific epithet refers to the ventral lobe of the lateral leaves be strongly recurved.

多齿光萼苔全缘变种 **Duo-Chi-Guang-E-Tai-Quan-Yuan-Bian-Zhong**

Porella campylophylla (Lehm. & Lindenb.) Trev.

var. *integra* Y. Jia & Qiang He var. nov. Fig. 2.

Plants medium-sized, in mats, flaccid and yellowish brown in herbarium material. Stem 4–6 cm long, rarely bipinnately branched, branches 5–15 mm long, slightly obliquely spreading. Leaves densely imbricate, keel short; dorsal-lobe widely spreading, flat, ovate-oblong, 1.4–1.7 mm long, 1.0–1.2 mm wide, apex obtuse or more or less acute, strongly 4–10 toothed consisted of 1–4 cells, lateral margins entire, dorsal lobe base slightly arching beyond the stem; apical and median cells 20–25 × 15–20 μm, walls thickened, basal cells 20–32 × 15–20 μm, walls thickened, trigones large, nodulose, and more or less confluent; ventral lobe of leaf rectangle-oblong when flattened, with obtuse apex, entire, occasionally retuse at apex, lateral base strongly long-decurrent. Underleaves more than twice as wide as the stem, when flattened, oblong, margins flattened, entire, the insertion deeply sinuate, the base very long-decurrent; apical and median cells 12.5–25 × 10–20 μm, thick-walled, basal cells 17.5–42.5 × 12.5–17.5 μm, walls strongly thickened.

Sporophytes not seen.

Type: China. Yunnan, Weixi Co., Yezhi town, 2 800 m, May 8 1982, X. J. Li 123a (holotype: KUN).

Etymology. The variety epithet refers to the entire underleaves and ventral lobe of leaves.

P. campylophylla somewhat is similar to *P. caespitans* in the apex with the teeth, but *P. campylophylla* has more strong teeth, usually 4–6 toothed, but *P. caespitans* often has 1–2 small, additional teeth. The relationship among *P. campylophylla*, *P. caespitans* and *P. acutifolia* should be further clarified by molecular data and the characters of sporophyte in the

future study.

P. campylophylla is a highly variable species. It occurs in China, India (Hattori, 1969, 1975; Shaheen and Srivastava, 1989), Nepal (Hattori, 1969; Hattori, 1975), Bhutan (Long, 1979), Viet Nam (Pócs, 1968, as *P. plumosa* var. *gollanii*). Hattori (1978) described *P. campylophylla* with a variety, *P. campylophylla* var. *ligulifera* and a subspecies *P. campylophylla* subsp. *lancistipula*. Shaheen

and Srivastava (1989) studied *Porella campylophylla* complex in India, published a new variety, *P. campylophylla* var. *ptychantha*. Hattori (1970) made a new combination: *Porella campylophylla* subsp. *tosana*, but Hattori (1978) changed it as *Porella acutifolia* subsp. *tosana*. Our new variety differs from the other members of *P. campylophylla* complex in having entire underleaves and ventral lobes of leaves.

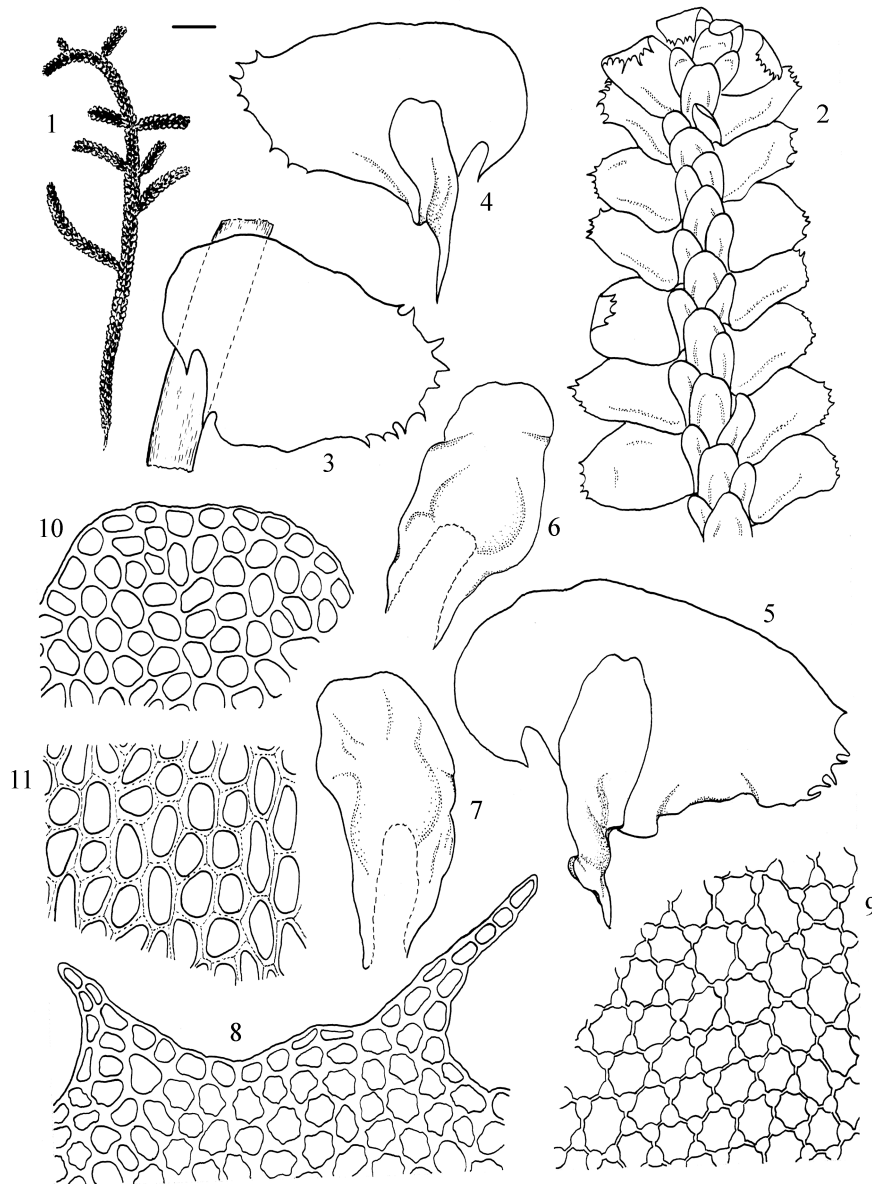


Fig. 2 *Porella campylophylla* (Lehm. & Lindenb.) Trev. var. *integra* Y. Jia & Q. He

1. A portion of plant; 2. A portion of branch; 3. Part of stem, dorsal view, showing the insertion of dorsal leaf-lobe to the stem; 4-5. Leaves; 6-7. Underleaves; 8. Apical leaf cells of the dorsal leaf-lobe; 9. Basal leaf cells of the dorsal leaf-lobe; 10. Apical leaf cells of the underleaf; 11. Basal leaf cells of the underleaf. Drawn from X. J. Li 123a (China: Yunnan, Weixi Co., 2800 m, May 8, 1982, in KUN). (Scale=0.5 cm, for 1; Scale=0.45 mm, for 2; Scale=0.25 mm, for 3-7; Scale=25 μm , for 8-11). (Drawn by Qiang He)

Up to date, *P. campylophylla* includes *P. campylophylla* subsp. *lancistipula* (Stephani) S. Hatt., *P. campylophylla* var. *ligulifera* S. Hatt., *P. campylophylla* var. *ptychantha* (Mitt.) Shaheen & S. C. Srivast., *P. campylophylla* var. *tixieri* (Pócs) S. Hatt. In China, *Porella campylophylla* var. *campylophylla* and *P. campylophylla* var. *ligulifera* (Tayl.) S. Hatt. were recorded (Piippo, 1990; Jia and He, 2013). Here, we provide a key to the infraspecific taxa of *Porella campylophylla*.

Key to the infraspecific taxa of *Porella campylophylla*

1. Under-leaves entire 2
1. Under-leaves 3-10 toothed at apex 3
2. Ventral leaf-lobes and underleaves acuminate
..... *P. campylophylla* subsp. *lancistipula*
2. Ventral leaf-lobes and underleaves obtuse to subtruncate
..... *P. campylophylla* var. *integra*
3. Under-leaves not or slightly decurrent
..... *P. campylophylla* var. *tixieri*
3. Under-leaves decurrent 4
4. Leaf-lobes ovate-oblong with obtuse or subtruncate apices,
reduced and blunt teeth at apex
..... *P. campylophylla* var. *ptychantha*
4. Leaf-lobes triangular-ovate with acute to acuminate apices,
3-8 sharp teeth at apex
..... *P. campylophylla* var. *ligulifera*

Acknowledgments: We thank the curator of KUN for the loan of specimens. Special thanks are due to Dr. He Xiao-Lan for reading and reviewing the manuscript.

References:

- An DG, 2002. *Flora of Higher Plant of Mt. Xiaolongshan, Gansu, China* [M]. Lanzhou: Gansu Minorities Press, 1—1249
- Bai XL, 2000. Porellaceae [A] // *Flora Yunnanica* Vol. 17 (Gao Chien and Cao Tong, editors in chief) [M]. Beijing: Science Press, 352—378
- Boisselier-Dubayle MC, Bischler H, 1994. A combination of molecular and morphological characters for delimitation of taxa in European *Porella* [J]. *Journal of Bryology*, **18**: 1—11
- Bischler H., Boisselier-Dubayle MC, Fontinha S *et al.*, 2006. Species boundaries in European and Macaronesian *Porella* L. (Jungermanniales, Porellaceae) [J]. *Cryptogamie Bryologie*, **27**: 35—57
- Frey W, Stech M, 2009. Bryophytes and seedless vascular plants. 3: 1—IX,. In *Syl. Pl. Fam.* ed. 13. Gebr. Borntraeger Verlagsbuch-
- handlung, Berlin, Stuttgart, Germany
- Gao C, Aur CW, 1978. Notulae de porella sinae boreali-orientalis [J]. *Acta Phytotaxonomica Sinica*, **16** (1): 78—90
- Gao C, Wu YH (editors in chief), 2010. *Genera Hepaticopsida et Anthocerotopsida Sinicorum* [M]. Beijing: Science Press, 1—636
- Hattori S, 1969. Studies of the Asiatic species of the genus *Porella* (Hepaticae), II [J]. *Journal of the Hattori Botanical Laboratory*, **32**: 319—359
- Hattori S, 1970. Studies of the Asiatic species of the genus *Porella* (Hepaticae). III [J]. *Journal of the Hattori Botanical Laboratory*, **33**: 41—87
- Hattori S, 1971. Studies of the Asiatic species of the genus *Porella* (Hepaticae). IV [J]. *Journal of the Hattori Botanical Laboratory*, **34**: 411—428
- Hattori S, 1975. Studies of the Asiatic species of the genus *Porella* (Hepaticae). V [J]. *Journal of the Hattori Botanical Laboratory*, **39**: 269—276
- Hattori S, 1978. Studies of the Asiatic species of the genus *Porella* (Hepaticae). VII. A synopsis of Asiatic Porellaceae [J]. *Journal of the Hattori Botanical Laboratory*, **44**: 91—120
- Hentschel J, Zhu RL, Long DG *et al.*, 2007. A phylogeny of *Porella* (Porellaceae, Jungermanniopsida) based on nuclear and chloroplast DNA sequences [J]. *Molecular Phylogenetics and Evolution*, **45**: 693—705
- Jia Y, He S, 2013. “Species Catalogue of China” Vol. 1 Plants Bryophytes [M]. Beijing: Science Press, 1—525
- Long DG, 1979. Hepaticae from Bhutan, East Himalaya [J]. *Lindbergia*, **5** (1): 54—62
- Luo JX, Wu PC, 1980. A preliminary report on the new bryophytes of Xizang (Tibet) [J]. *Acta Phytotaxonomica Sinica*, **18** (1): 119—125
- Luo JX, 1987. Three new species of *Porella* from Mountain Hengduan, China [J]. *Acta Phytotaxonomica Sinica*, **25** (6): 482—485
- Luo JX, 2000. Porellaceae [A] // *Bryoflora of Hengduan Mts.* (Wu Peng-Cheng, editor in chief) [M]. Beijing: Science Press, 89—112
- Piippo S, 1990. Annotated catalogue of Chinese Hepaticae and Anthocerotae [J]. *Journal of the Hattori Botanical Laboratory*, **68**: 1—192
- Pócs T, 1968. The genus *Porella* in Vietnam [J]. *Journal of the Hattori Botanical Laboratory*, **31**: 65—93
- Shaheen F, Srivastava SG, 1989. *Porella campylophylla* (Lehm. & Lindenb.) Trev. Complex in India [J]. *Geophytology*, **19** (1): 34—48
- Schuster RM, 1980. *The Hepaticae and Anthocerotae of North America East of the Hundredth Meridian*, Vol. 4 [M]. New York: Columbia University Press, 1—1334
- Wu YH, Gao C, Tan BC, 2002. New checklist of bryophytes of Gansu Province, China [J]. *Arctoa*, **11**: 11—22
- Wu YH, Chen L, Li W *et al.*, 2009. Preliminary study on Hepaticae from Gansu Province [J]. *Bulletin of Botanical Research*, **29** (5): 607—614